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Publisher: Routledge
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Royal United Services Institution. Journal

Publication details, including
instructions for authors and
subscription information:
[http://www.tandfonline.com/
loi/rusi19](http://www.tandfonline.com/loi/rusi19)

The Mercantile Marine Considered as an Auxiliary to the Royal Navy

T. Brassey Esq., M.P.
Published online: 11 Sep 2009.

To cite this article: T. Brassey Esq., M.P. (1876) The Mercantile
Marine Considered as an Auxiliary to the Royal Navy, Royal
United Services Institution. Journal, 20:87, 493-507, DOI:
[10.1080/03071847609416308](https://doi.org/10.1080/03071847609416308)

To link to this article: [http://
dx.doi.org/10.1080/03071847609416308](http://dx.doi.org/10.1080/03071847609416308)

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LECTURE.

Friday, June 23rd, 1876.

ADMIRAL SIR HENRY J. CODRINGTON, K.C.B., Chairman of the Council, in the Chair.

THE MERCANTILE MARINE CONSIDERED AS AN AUXILIARY TO THE ROYAL NAVY.

By T. BRASSEY, Esq., M.P.

MR. BRASSEY: I have been honoured with an invitation from the Council of this Institution to address the members on more than one occasion before-to-day. Having previously written a long paper, with reference to the *personnel* of the merchant service, and its actual condition so far as it would be appreciated by an analysis of the Parliamentary literature on the subject, I feel that it is not necessary for me now to do more than give a short statement of the strength of the merchant service in regard to the ships. Of course the review of the situation in regard to the merchant steamers is exceedingly incomplete, unless those vessels are considered from a naval architect's point of view, and also from a naval Officer's point of view. Now I am not in a position to state to this meeting, as my friend Mr. Barnaby could, if he were not bound by official reticence, what the value of these vessels would be with regard to the power of carrying guns, and still less am I able to treat the subject from a naval Officer's point of view, and to indicate to the meeting the kind of armament which would be most suitable for vessels of the kind which we have to take into our review.

When I was asked by the Council to prepare a short paper on this subject it was suggested, and I was very thankful for the suggestion, that the preparation should be a joint labour to be undertaken by Captain Wilson and your humble servant. The difficulty was to know how the twin brothers were to work, and I suggested to Captain Wilson that he should undertake, if he were disposed to do so, a consideration of the best mode of providing the armament for these vessels, while I would undertake to examine the Parliamentary documents, and to ascertain the number of the vessels, and some of their qualities with reference to their speed. From various circumstances with which I am not acquainted, Captain Wilson has not yet set forth upon his part of the task, and I can only hope that he will be kind enough to follow up this short statement which I am now about to read with reference to the number of steamers that we possess, by considering, as only a naval Officer can, how it would be most expedient that they should be armed for the purposes of war. With these few words of explanation I proceed to read to you the paper which I have prepared.

It is proposed in the present paper to give a brief review of the resources we possess in our merchant navy for home defence, and for the protection of our commerce. Some may think that we are so secure, that preparation for the emergency of war is superfluous. We ought not, however, to be over-confident, for, as Lord Palmerston wisely said, "to imagine that we are safe from invasion now, without precautions, "because hitherto we have prevented it by precautions, is the greatest "of all possible absurdities."

The steam tonnage of the British Empire, according to the latest returns, is 1,825,000 tons; that of the United States, for over-sea foreign trade, 193,000 tons. France has 516 steamers, of 188,000 tons, and Norway has 199 steamers, of 39,000 tons. Our larger vessels are at least as well adapted for conversion into cruisers for the protection of commerce as the trading steamers of other nations are adapted for conversion into privateers. Our merchant navy list includes the following:—

Tons register.	Number of Steam-ships.
3,000 tons, and above.....	8
2,500 " to 3,000 tons.....	24
2,000 " " 2,500 "	55
1,500 " " 2,000 "	165
1,200 " " 1,500 "	167
	Total 419

It may be presumed that all these ships could carry at least two armour-piercing guns, and in addition, a considerable armament of the 64-pounder gun, which, at the present time, seems to be the favourite weapon in the Navy for vessels not intended to engage ironclads.

I may perhaps here venture to interpose an observation upon the much-debated question of armament. Many naval men are of opinion that armour-piercing guns should be mounted in every vessel in the service. They think that there is safety in numbers; and that, however hopeless it may seem for a small unarmoured vessel to engage a heavy ironclad, circumstances may arise in which a flotilla of small vessels, armed with powerful guns, might inflict fatal injury even on an ironclad. It is to be remembered that the large vessel carries very few guns, and that our most powerful naval artillery has become so ponderous, and the range of view so limited, since the introduction of armour, that perfect accuracy of aim cannot be relied upon, especially should the fire be directed against a small gunboat moving rapidly on an irregular course. Hence a large vessel in narrow waters might suffer most seriously from a combined attack by a flotilla of gunboats of the "Coquette" class, or a squadron of cruisers of the "Opal" type. It would seem desirable, therefore, to introduce a mixed armament, at least in some of the vessels, which are now armed exclusively with the 64-pounder gun.

To return to the merchant navy, it would be a statesmanlike measure on the part of the Admiralty to enter into communication with the owners of ocean steamers, and to endeavour to agree upon terms for the hire of such vessels, in the event of war. As it has been thought expedient to engage a certain number of the merchant seamen to serve in the Navy, by giving them an annual retainer during peace; so it might be worth while to subsidize the owners of steamers, adapted to carry an armament, in consideration of their undertaking to hold their ships at the disposal of the Government in the event of war. No less than 640 steamers were hired by the Government of the

United States during the civil war, and without these vessels it would have been absolutely impossible to have blockaded the coast of the Southern Confederacy.

What occurs to me as important in carrying out this suggestion is this, that it being admitted that by far the greater number of merchant steamers being, when built solely for mercantile purposes, very imperfectly adapted to any service of war, it would probably be an expedient course for the Government to endeavour to enter into communication with shipowners at a time when they were contemplating building new vessels, so that there might be introduced in the original design those necessary modifications which would enable the ships to carry guns. No doubt shipowners would say, "These things do not advance our interests in the least; we look simply to carrying passengers and cargo, and we are not prepared to alter our designs." To that, of course, the ready answer is, it is a mere question of expense, and if the Government be prepared to pay the expense for these modifications, and if the vessel be not injured by them for commercial purposes, I take it there would be no objection on the part of many merchants to do it, especially if the Government were prepared to pay a sufficient sum by way of retainer, enabling them to make use of these vessels for a stipulated amount in case of war. Of course such a suggestion means expense, but it may be better that the public money should be spent in that way; for I take it for a given sum of money you would have a very much larger number of vessels at your disposal, than if you built vessels expressly and solely for the purpose of war; and whereas an unarmoured vessel may be utilised as a merchant vessel in time of peace, it is quite certain that no ironclad can be utilised for that purpose. The question therefore is, whether it is not desirable to spend as large a sum available for ship-building as possible upon vessels which are exclusively of the fighting class, and to endeavour to supplement the fighting class by subsidiary vessels to be partly engaged in time of peace in the merchant service. Of course these things present themselves to everybody in the House of Commons from a financial point of view; perhaps they do not strike naval Officers in the same way; but what we have to consider is that the sum available for ship-building is not an unlimited quantity. There is only so much money available. You may have to increase the estimates; we have increased the estimates; we are increasing the estimates; and I dare say we shall increase them still more; but even assuming that we are to proceed in the direction of further expenditure, still after all the sum of money is limited, and no one knows it and feels it more keenly than those who, like Mr. Barnaby, have to rack their brains year after year in order to produce the greatest amount of force for the money placed at their disposal. Therefore it is worthy of consideration, whether you cannot provide your unarmoured fleet in part by some alliance and partnership with the merchant service.

All naval Officers are agreed in attaching more or less importance to the quality of speed in unarmoured vessels. The "Inconstant" was built specially with the view to attain an unprecedented speed. Now in point of speed, and in coal-carrying capacity, the fine steamers employed in the North Atlantic trade, present very remarkable elements of power. In his exhaustive work, Mr. Lindsay has published details, giving the average passages of the principal lines of ocean steamers between Liverpool and New York. The speed and regularity maintained are truly marvellous. I give a few figures, extracted from Mr. Lindsay's tables, which will serve to show what an immense reserve of power we possess in our merchant navy for the emergency of war.

The distance from Queenstown to Sandy Hook is 2,777 miles, and it was performed in the years 1873 and 1874, outwards and homewards, by the steamers of the White Star, Cunard, and Inman lines, at the average speed shown in the following table:—

Line.	Outwards.						Homewards.						
	1873.			1874.			1873.			1874.			
	Sail-ings.	Average time.		Sail-ings.	Average time.		Sail-ings.	Average time.		Sail-ings.	Average time.		
		Days.	Hours.		Mins.	Days.		Hours.	Mins.		Days.	Hours.	Mins.
White Star	47	9	19	48	50	9	22	53	47	50	8	20	42
Cunard	52	10	16	54	52	10	16	54	53	52	9	5	46
Inman	50	10	22	4	51	10	22	1	52	51	9	10	50

In each year there were a few voyages of exceptional duration :—

Time.	Outwards.						Homewards.					
	White Star.			Cunard.			White Star.			Cunard.		
	1873.	1874.		1873.	1874.		1873.	1874.		1873.	1874.	
		Days.	Hours.		Days.	Hours.		Days.	Hours.		Days.	Hours.
Over 12 days	2	2	4	6	4	7	0	0	0	0	2	0
" 13 "	0	0	2	0	1	3	0	0	0	0	0	0
" 14 "	0	2	2	1	6	4	0	0	0	0	1	0

As an example of the marvellous perfection to which ocean steaming has been brought by the enterprise of British shipowners, unaided by subsidies from the Government, the recent performances may be cited of the "City of Berlin":—

Log of the Iron steamer "City of Berlin."

Queenstown to Sandy Hook.			Sandy Hook to Queenstown.		
Days.	Hours.	Minutes.	Days.	Hours.	Minutes.
7	18	2	7	15	28
Date.	Distance run.		Date.	Distance run.	
1875.			1875.		
Sept. 18	303 miles.		Oct. 3.....	383 miles.	
" 19	367 "		" 4.....	362 "	
" 20	376 "		" 5.....	366 "	
" 21	368 "		" 6.....	361 "	
" 22	380 "		" 7.....	381 "	
" 23	324 "		" 8.....	347 ¹ "	
" 24	381 "		" 9.....	362 "	
" 25	380 "		" 10.....	253 "	

¹ Fresh gale and heavy beam sea.

The performances of the White Star line have been equally remarkable for the extraordinary speed attained. In 1873 the *Adriatic*, sailing west, made the voyage from Queenstown to Sandy Hook at the average speed of 18.55 statute miles per hour; and in March, 1872, the same ship made the passage, sailing east, at the rate of 18.9 miles per hour. The regularity of this vessel's passage is not less remarkable than the speed, the average time for twenty-nine voyages from New York to Queenstown being 8 days 10 hours 57 minutes.

The shortest passage was in October, 1874, occupying only 7 days 23 hours 12 minutes. This passage was surpassed, by a few minutes only, by the "*Germanic*," which made the run from Queenstown to Sandy Hook, in August, 1873, in 7 days 23 hours 7 minutes. The greatest run in a single day, recorded by Mr. Lindsay, was made by the "*Adriatic*," on the 10th April, 1873, on which day she steamed 396 miles, the course being S. 61° W., with the wind N., force 6.

These particulars will have sufficiently shown what the large steamers of our Merchant Service can do. We are equally strong in the means of coast defence. The flotilla of steamers in our home-trade includes 5,530 vessels under 50 tons, 4,173 over 50 and under 100 tons, and 1,670 steamers over 100 and under 200 tons. If these 11,373 steamers were all equipped with Harvey's towing torpedo, and if, in addition, all those of sufficient strength were armed with one or two guns, no hostile fleet could approach our shores with impunity.

The torpedo has given a ready means of converting the smallest steamer into a formidable vessel of war. Torpedoes should be kept in store in all our great commercial ports. The captains of tugs and other suitable vessels should be formed into a Marine Torpedo Corps.

They should be thoroughly drilled in the use of the weapon by experienced officers, and their services should be secured by a retainer or pension.

A report was made to the Admiralty some years ago as to the adaptability of the tug and ferry-boats of the port of Liverpool for conversion into gunboats. A large number were found to be capable of carrying the heaviest gun at that time mounted on board ship. The 81-ton gun has since been constructed. A weapon so formidable can only be carried in a vessel of special construction and of large tonnage. The torpedo, however, has to a considerable extent neutralized the increased power of the gun, and has furnished us with the means of arming with a powerful weapon, every swift and handy steamer for coast defence. By the use of the torpedo and submarine mine, the narrow, shoal, and tortuous channels of approach to London, Liverpool, Hull, Glasgow, Cork, Bristol, and Cardiff—in short, all the busiest sea-ports—may be closed to the most formidable ironclads.

Though the subject is more interesting to a naval Officer than to a naval architect, I cannot omit from the catalogue of ships required for the Navy, a certain number of sailing vessels, to be attached to the receiving ships at Devonport, Portsmouth, and Sheerness, for the purpose of taking the seamen to cruize in the Channel in summer, and to Lisbon and Gibraltar in winter. Such vessels become more and more necessary for training purposes at a time when it seems probable that the fighting navy will be largely composed of mastless ironclads.

Having elsewhere shown the great superiority of our armoured fleet, I may here, in conclusion, advert to the relative condition of the Navy in unarmoured vessels. The Americans have only 39 unarmoured cruisers, and very few of these have a speed of 10 knots, a considerable number being unable to steam more than 7 knots an hour.

Probably gallant gentlemen in this room have had in their hands Admiral Porter's Annual Reports upon the condition of the United States Navy, and those who have read those publications must be aware of his great disappointment at the want of speed which characterises the unarmoured vessels which are placed at his disposal by a legislature which is even more narrow-minded than the British.

The Russians have but few unarmoured cruisers, and their entire fleet in the Baltic and Black Seas only carries 271 guns. The Germans have only 11 corvettes and 4 despatch boats, carrying altogether 145 guns. The Turks are practically without a cruising squadron.

I say that with deference to those who know more about these things than I do; but to the best of my belief the Turks do not possess any unarmoured cruisers of a kind which we should view with satisfaction if they belonged to our own service. Gallant gentlemen must appreciate the very different view we take of ships when they fight under the British flag and when they fight under a foreign flag. We are certainly more critical with our own ships than with foreign ships. That perhaps is quite right.

When, therefore, we compare our own position with that of other Powers, and when we find that the ships included in the return of vessels building in 1875, will carry no less than 304 guns, of a calibre on the whole incomparably heavier than that of the artillery mounted in the unarmoured ships of other Powers, it must be clear that our situation,

both in the present and in prospective, can give no just grounds for anxiety to the most susceptible and timid mind. The superiority of our resources will not, however, give us any proportionate advantage without complete and careful organization.

I most sincerely hope that the attention which this Institution is pleased to direct to these subjects may have the effect of promoting arrangements of the kind which I venture to indicate between the Admiralty and the merchant service. I believe that in our merchant steam navy we now possess what might, with a certain amount of trouble and expense, be converted into a valuable auxiliary; but if we were to take this question in hand in a masterly, effective, and liberal spirit, I believe that what we possess now is as nothing to what we might have hereafter. I trust the subject will be taken up perhaps by Captain Scott, or some other gallant gentleman, and worked out in a lecture to be delivered in this Institution at no very distant date. The *personnel* of the merchant service I have already ventured to discuss in a lecture delivered here in February, and the organization of that *personnel* as a reserve has also been treated, no doubt very imperfectly, by me, and much more satisfactorily by others in former lectures delivered in this Institution, and I believe that our labours have borne fruit. Anyhow, the Naval Reserve has been immensely strengthened in the last few years. I wish we could go further in that direction. I wish that every able-bodied seaman in the merchant service could be induced to register his name on the Reserve lists of the Navy. If that were done, if we had our seafaring population as much at the command of the country in an emergency as the seafaring population of France is, of course we should be, in even a greater sense than we are now, the dominant maritime power of the world. In order to accomplish that, you must have either compulsion or expenditure. We cannot have compulsion, and I think we have now sufficient expenditure. I think we give enough to the Naval Reserve individually. Therefore, the great question is to consider whether there are prejudices still lying more or less dormant in the minds of the seafaring people which tend to keep them out of the Navy. I was talking upon this subject only a few days ago with Captain Furnell, the Superintendent of Green's Sailors' Home, now very large shipping offices, and he told me that there still is an amount of stupid prejudice which keeps a great number of sailors from joining the Naval Reserve. He says that their wives object to it. The wives, I am happy to say, have great influence in that, as they ought to have in every class of society, and they think that this Naval Reserve means fighting, and interruption to domestic happiness, and their influence is strongly exerted in a sense adverse to the Naval Reserve. Well, I hope that may be overcome. The fighting will only be for their hearths and homes; and if their husbands did not go forth on the supreme emergency it would be very awkward for the wives, and I hope that may be appreciated. I have nothing more to say, and I thank you very much for your patient hearing.

The CHAIRMAN: The subject is a most interesting one to us, and I hope there are gentlemen present who will kindly favour us with their opinions not only on the constructive part but also on the part relating to the *personnel* of the mercantile marine.

Commander W. DAWSON, R.N.: It is a very important question whether in a national emergency this country cannot have the benefit of the services of some 4,000 or 5,000 splendid steam-ships, and whether no means can be devised for converting these steam-ships into valuable auxiliary engines of war for the defence of the country. You, Mr. Chairman, may remember better than I do, how about a quarter of a century ago a Committee of Naval Officers was appointed to consider the armament of merchant steam-ships. In those days we had not the mechanical means of mounting guns which Captain Scott has now provided us with, and it was decided that it would require a good deal of strengthening to the decks and beams of these ships in order to make them fit to mount and work even the 32-pounders of that day; but I take it there would be no difficulty in the present state of mechanical science in mounting, say 64-pounders, in most of the sea-going steam-ships of the Merchant Navy. It is true that it is a question of expense, but we are speaking of an occasion of a maritime struggle for national existence, and then expense must be

thrown to the winds. It would not then be a question of 10,000,000*l.* or 11,000,000*l.* for the Naval Estimates, but of saving the country. It is, therefore, a question that ought to be taken into serious consideration now, in the piping time of peace, in order that it may not only be done economically, but efficiently, and rapidly, when the time of trial comes. It would be well if the Government could experiment a little on merchant vessels of different classes, in order to give naval architects and naval artillerists an opportunity of discovering what is the best and cheapest way of strengthening these ships, and what armaments they could most conveniently carry. For my own part, I see no difficulty in the way of strengthening any sea-going merchant ships by internal girders and cradle work, so that she shall carry any sized gun. But no very extreme weight of ordnance is required. What is required is this, that merchant vessels may be made capable of carrying an ordinary gun; that their bows may be fortified for ramming, and that provision may be made for the use of various kinds of offensive torpedoes, so that when called upon, they may be able to fight vessels of somewhat the same class. So far I quite agree with those who are of opinion that auxiliary unarmoured vessels converted from the merchant navy need not carry guns capable of piercing thickly armoured ships. But there is a class of unarmoured vessels beyond these, auxiliary merchant ships—unarmoured men-of-war for attacking forts and for other purposes, and the armament of those vessels is a disputed point. I am one in favour of the mixed armament which Mr. Brassey has put forward, but he has not quite brought forward my argument, which is this:—An English ship-of-war cannot always be the strongest in fight; she cannot always be the fastest on the seas, and she may be driven into such a corner that she cannot run away, and must either strike her flag or fight a far superior force. Her guns ought to be capable of perforating that superior force, whatever thickness the sides of the enemy's ships may be. If her guns are not capable of perforating the enemy, she is perfectly helpless, and I do not think it is fair to send men in command of unarmoured vessels, armed with weak hitting guns, out to China or the Pacific, where they may be compelled to encounter ironclads. Let the guns be so powerful that the English ships-of-war, of whatever size, can pierce the hostile side, and then English Captains need not be frightened because they cannot run away from a Japanese, a Peruvian, or a Turkish ironclad. This is why I am strongly in favour of mixed armaments for the smaller class of ships-of-war. With reference to the auxiliary force of cruising ships, there is no reason why the country should not be able to avail itself of the services of the steam-ships of the Mercantile Marine in case of war if they be provided with guns, torpedoes, and fortified bows; and as to expense, that must be thrown to the winds in a national emergency. As to the question of *personnel*, there were two points raised on the last occasion in the course of the discussion which rather taxed my credulity. One was, that the number of able seamen in our merchant navy who are not foreigners was so small that it would be about an average of one English able seaman per registered ship in the British Mercantile Marine. ("A.B.'s—first-class men?") Yes, I mean A.B.'s. My credulity cannot take that in; but I was relieved a little by another very eminent authority, who told us he had gone into the figures some little time ago, and had found that 12,000 fighting men were quite sufficient for the purpose of manning all the merchant steamers that we had under the British flag for fighting purposes. Well, if we take 4,000 in round numbers as the number of available merchant steamers that might be converted for fighting purposes, that would be three able seamen to a ship. Well, it would depend on how many fighting men were in the enemy's ship, whether those three able seamen would suffice to fight the enemy, unless they acted as Captain Bobadil, and asked the enemy to stand forward three men at a time. But I do protest against the assumption that 12,000 fighting men would go any reasonable way in manning the fighting ships which we could draw from the Mercantile Marine, to say nothing of the ships which we should capture from the enemy. I protest quite as strongly against that assumption as against the idea that there is only one able-bodied seaman to each registered English ship.

The CHAIRMAN: The subject at present is not quite so much the *personnel* as the *matériel* of the mercantile navy.

Commander W. DAWSON, R.N.: I understood you to invite discussion on the

personnel. I just wished to allude to those two points in our former discussion, and to say how cordially I agree with what Mr. Brassey put forward in a pamphlet which he published last year, on unarmoured vessels, and to thank him for the labour he has so frequently bestowed in representing the Navy, as he has so nobly done both in the House of Commons and elsewhere.

Rear-Admiral DE HORSEY: I think we are very much indebted to Mr. Brassey now, as we always are when he gives us his valuable information on naval matters, and I feel particularly the importance of the subject he has mentioned to day, the arming of the Merchant Navy; but I should like to suggest its being done in a different way. Preparing passenger and other merchant ships for carrying guns now in time of peace would lead to very large expenditure, and I think the shipowners would not be satisfied even if they were well paid, for they would say it interfered with their speed and the accommodation for passengers and cargo. I cannot see why the Government should not bring in a bill to empower them in the event of war to take such vessels as they required, at a valuation, as they now take land for public works and for public convenience, as in the case of railways. How much greater would the cause be when it was for the safety of the nation in time of war! I think that no reasonable shipowner could complain if a fair sum was given him for his ship when she was wanted. With regard to strengthening an ocean steamer to carry guns (I speak with diffidence in the presence of Mr. Barnaby and other naval architects), but I can conceive no difficulty whatever. Their hulls are as well able to carry 100 tons in the shape of a gun as in the shape of cargo. The part that requires strengthening is the deck, and our naval architects are quite able to put any amount of strengthening. I feel confident that they would make no difficulty about that in time of danger. The Chairman said that we were not to talk about the *personnel*, but perhaps I may be allowed to say one word. I think to improve the *personnel* of the Naval Reserve it would be desirable in the first place to improve the Merchant Navy. The men require improving before they are fit for us to take into the Naval Reserve.

Captain BEDFORD PIM, R.N., M.P.: I see a very eminent naval architect present, Mr. Scott Russell, and I should like to ask him to give us the benefit of his opinion upon this point. Mr. Brassey tells us that we have in our Merchant Navy 419 ships of a large size, and that "it may be presumed that all these ships could "carry at least two armour-piercing guns, and in addition a considerable armament "of the 64-pounder gun, which at the present time seems to be the favourite "weapon in the Navy for vessels not intended to engage ironclads." The question I wish to ask Mr. Scott Russell is simply this: all those ships have at least eight times their beam for length; many of them have ten times their beam for length. Will Mr. Scott Russell tell us whether any one of those ships can carry the armament proposed by Mr. Brassey upon her upper deck without capsizing, and especially after she has got well out of her coals, after, say, five days' run? For my part I believe that the mere firing the gun, would start every rivet in its neighbourhood. It seems to me that the long, narrow, unhandy steamers we have at the present time are utterly incapable of being used in time of war with heavy guns on the upper deck.

Captain SCOTT: What do you call a heavy gun?

Captain PIM: A 25-ton gun—the gun named by Mr. Brassey.

Admiral SELWYN: I join most heartily with those speakers who have said that Mr. Brassey's paper is one of the most thoughtful and valuable that we have had in this Institution on the subject. In almost all the conclusions which he draws, I should thoroughly agree. I am particularly able to confirm all that he has said with regard to the value of the great ocean lines running across the Atlantic, since I have been very often across lately, and have seen vessels doing even better work than those of which he has given you the returns. He has got only eight above 3,000 tons. I think that will be subject to the new measurement, which will make a little change in favour of a larger tonnage. Mr. Scott Russell has been for many years practising all sorts of plans to make a difference between the measurement tonnage and the actual carrying capacity, with great success to his firm, but when we are considering such questions as this, that should be eliminated. Their fuel-power is extraordinarily great, and so is their speed, and these are two points on

which we ought to be able to imitate them more nearly in the Navy. They will be of the utmost value in case of war, when we shall be called upon probably to provide for the rapid carrying of troops to our colonial possessions. With regard to their carrying guns, I entirely agree with Admiral de Horsey and others that there would be no real difficulty if you give them the right carriages. The question of weights could be easily disposed of. The weight on deck is nothing in a ship of that size. Captain Pim has forgotten that length gives stability as well as beam. As to the question of subsidy in peace, I think it would be rather a wasteful expenditure, because our most durable steam-lines do not always remain in the same hands, and in some cases the change is very frequent, and we cannot give an owner a subsidy when the ship would pass out of his hands. I would rather give the full value for the ship, as was done in the case of the "Himalaya" in the time of the Crimean war, with good effect. With regard to the torpedo, I quite agree with Mr. Brassey that it is a most admirable weapon, and that even where no guns can be carried, it would be most formidable in the hands of a fast cruiser. Those who dared to follow her, would very often find a torpedo in their path. The question on which I venture slightly to differ from Mr. Brassey is this: the Navy of England has, as its chief purpose, the protection of the commerce. Commerce must be carried on, if we would have the sinews of war equally during war and peace; and we cannot afford to take away the very best ships from that commerce at the moment when we are most pressed for our food and for other things which are essential to the well-being of the nation; and we must recollect that every vessel taken under those circumstances from the Mercantile Marine takes a certain portion from the sinews of war. If we are driven into a corner and overweighted, then it is quite clear that, as with the Volunteers so with the Mercantile Marine, every nerve must be strained to defend the Empire. For that purpose organization and registration ought to take place now. Every inquiry ought to be made during peace, that we may be prepared to take them when the necessity arises. We ought to think that it is wiser to spend treble on the Navy for really efficient vessels during peace than to take from those which would provide the sinews of war when the necessity arises. As regards the *personnel*, I will only say one word, and that is, I think the money may be expended much more wisely than it is now, and with much better effect, if we only give when the men come back to us, instead of giving constantly.

Mr. BARNABY: I came here to listen to what might be said by Mr. Brassey, and by the gentlemen assembled here, and not for the purpose of saying anything myself. I feel as Mr. Scott Russell does, that I would like to hear all the Naval Officers speak, and I think I may ask to be excused from saying more than one or two words. It is right perhaps that I should say this much, that the difficulty which is felt with regard to the use of merchant ships for fighting purposes is not with reference to the strength of their structure, nor their stability, but with reference to their division into compartments. It will be remembered by everybody here, that as iron came to be used very largely in the Merchant Navy, it was believed that the time was come for giving up that mode of strengthening the Navy in time of war, and the Report of the Committee in 1852 was to the effect that those vessels being unfit for war purposes, the subsidies which had been granted ought to be put an end to. Fresh light and the introduction of better material and better modes of construction, and other weapons than guns, have brought us round to the conviction that iron ships built for mercantile purposes may be armed and used certainly for their own defence in time of war, and possibly also as auxiliary to the Royal Navy: but I would point out again that the one difficulty that has to be overcome is, that the merchant ships which are being built, and some of the grandest among them as to speed, coal-carrying power, and sea-going qualities, are deficient in what we consider ought to be a necessary provision for security against foundering in the event of any one of their compartments being damaged. What the arrangement with the owners should be is a question which is undergoing the consideration of the Admiralty, and you will excuse my saying anything further upon it.

Mr. SCOTT RUSSELL, F.R.S.: Sir, if no more sailors will do us poor shipbuilders the honour of confiding to us their views on this subject, I will give you mine. I will use Mr. Brassey's words: "The superiority of our resources will not give us any "proportionate advantage without complete and careful organization." And what

does organization mean? It means what Lord Palmerston said, arranging for war long beforehand, during peace. Now, if you ask me whether suddenly and abruptly, and all at once, on a demand from the Admiralty, we would undertake to select for them vessels which would be good, sound, safe vessels, capable of being armed even with the most ordinary guns, and engaging with anything like fair security in war, I say we could not take that responsibility; we won't take that responsibility. Therefore, I hope Mr. Brassey's paper will be received with the greatest possible weight attached to its last sentence, and that you will believe that the great mass of those ships which he has quoted, are not at all to be relied on for war purposes. Now, I wish I could say that we English are in a condition to defy everybody; that we are stronger than all the rest of the world put together. Gentlemen, I should be a traitor to you if I said so, because I should lead you to trust to a broken reed. Those vessels which Mr. Brassey has so eulogised, are vessels which with a very slight blow from a rock, or a rocket, or any of those ingenious weapons which we see exhibited in this place, would certainly go to the bottom. Therefore, I entreat you to place no faith in them. I do entreat you, on the other hand, to place faith in vessels which Mr. Barnaby and the Admiralty may be building, unarmoured, but with great precautions, trying to make them as safe as possible, and with power to carry certain guns. But as we are all friends and countrymen here, will you allow me to tell you of a terrible blunder you have made? I think about forty years ago I was asked to take the responsibility of building four Royal Mail steam-ships to carry mails for you at the greatest possible rate then known. I built you your ships; they were the fastest of the whole of that fleet; they were quite satisfactory; but what did you do at that time? You did this: you made me responsible to you that those ships should be capable of carrying guns, and before you would give the ships their subsidy for carrying the mails, you made them satisfy your Admiralty that they were seaworthy and able to protect their mails against invaders. Why have you dropped that? Can anybody tell me that you still do that? I asked the highest possible authority the other day what he could tell me about that, and he said he had never heard there was any such thing. You are now paying all the money you do for the mail service to magnificent fleets of ships without ever once asking whether those original arrangements have been adhered to, and whether the vessels are fit to be trusted in time of war. Now, I ask you Members of Parliament, what representatives are you of the public interest if you have allowed that sort of thing to go on? And now you come and read your papers! Why, if you had looked into the accounts of which you boast so much, if you had looked into the votes a little bit, you would have found that all that money that was paid to those companies on those conditions, has not been earned. Now, I think you will agree with me that there are funds at the disposal of the nation for this honest national purpose, and following up what Mr. Barnaby has said, I will do what I have always promised I would when you sailors put me a difficult question,—I will give you a straightforward, open answer. You tell me that you want merchant ships to be ready for your purposes in time of war. You have only to let that generally be known; you have only to tell all the ship-owners that you will give a preference to ships which have those qualities which you require; you have only to say that all your mail contracts shall include that condition which I have referred to; you have only to organize and arrange beforehand, and you will find one day that you can use all your Merchant Navy for war purposes, for it is not difficult to make them so. You have only to have a wise proportion of beam and depth; you have only to get a wise position for that beautiful element in our modern ships, which so many of you forget, the ballast! We have got ballast now without paying for it; we have got the most magnificent arrangement of ballast in our engines and boilers. If you put them in a foolish place, you make an unseaworthy ship; but if you put them in the right place, I become responsible to you that you can carry a large deck armament of those delightful 8-inch guns which we have been talking of. But if you do not do all this beforehand; if the Admiralty do not see that they are of the right proportions; and if the Post Office do not see that these things are carried out before they pay the quarterly dividends for carrying the mails, then they will never get them. Another thing you can perfectly well do to benefit the public, and the sea-faring population: you can make it a sin by Act of Parliament to send a large merchant steam-ship to

sea which was not practically unsinkable. You say that is nonsense; I say it is not nonsense, because my "Great Eastern" steam-ship, by the skill of a clever captain, who found out a rock in quite an out-of-the-way place, had a hole torn in the hull 83 feet long and 9 feet 10 inches wide in the centre, and with this hole in her bottom she went to the end of her journey. They tried to cobble it, and could not; and with this hole she came back from her journey. She carried all her passengers and cargo safe and dry to one end of the journey, and brought an entirely new set of passengers and cargo safe and dry to the other end. That she did, too, without being surveyed by the Admiralty, and without being chartered as a mail-ship. Now, I ask you, am I wrong in saying that if you will put the problem to us ship-builders, we know how to accomplish it? I think I know, and I think Mr. Barnaby does, how to make a respectable sea-going steam-ship, unsinkable by all the ordinary means; and I think he knows how to put on board such a ship a very large armament of guns, which may not be capable of encountering and sinking a fully armoured ship, but which will be capable of sinking a great many cruisers and privateers, and doing harm to a great many troublesome customers. Will you allow me to say one word as to how I should set about it in our private ships. I should like to have my unsinkable ships; I should like to have the ballast in the right place, which would be pretty low under the water; I should like to have my guns in the right place, and of a big diameter. I do not want to have them very heavy, because I do not want to be far away from the enemy; I want to come close to him. Give me big shell, big shot, and big bore; then with my fleet of twenty merchant ships I would surround this grand fellow with his 81-ton guns. I would pepper him, and if he sent one of his 81-ton shots through me here and there, I should not mind; if half-a-dozen of us sank it would not matter; if we sank him we should win the victory. Therefore, I entreat you not to arm those sinkable, incapable ships which Mr. Brassey has spoken of, with any hope of doing good, but return to your old ways as quickly as possible, and say that any person who desires the Government money, must, in some way or other, put his ships into a condition to be fit to serve for purposes of defence in time of war against all vessels of his own class, whether they are called privateers or anything else.

MR. BRASSEY: I am sorry that I am obliged to leave this room, but I trust it will not cause the discussion to terminate if any gentleman is anxious to address you. I am sure I appreciate very much, as I always do, the kind reception I meet with in this theatre. With regard to the speech which we have just heard with so much interest and satisfaction, I am quite sure it was a very instructive and stimulating discourse for those Members of Parliament who are present. I see before me three of the least benighted and incapable of your neighbours at St. Stephens, and I am sure we shall go back to our labours refreshed and encouraged by Mr. Scott Russell's speech. Feeling as I do from what he said, that the idea of utilising the merchant steamers is feasible if properly carried out, I certainly, along with others, will watch carefully the next arrangements that are made with regard to the contracts for carrying mails, and will not allow the opportunity to pass by neglected of introducing afresh into those agreements the beneficial arrangements which were formerly made, because I am one among others who take an interest in these subjects without having the professional knowledge which distinguishes Mr. Scott Russell. Therefore, one would not be disposed to press a view upon the House of Commons such as he has propounded, without being satisfied in the first instance by professional advice that it was proper to be entertained by Parliament. But now, after having heard so many able gentlemen assure us, that with comparatively inexpensive modifications introduced at the right time and in the right way, you may make a large number of your merchant steamers valuable for war, I say that when we come to deal with mail contracts again, we must make use of that which is an excellent opportunity of doing what I was proposing, that is, making your arrangements *ab initio*, when the vessel is about to be built. It may be that the same principle may be extended even to vessels which are not to be used for the conveyance of Her Majesty's mails. I am very sorry that I have to leave the room, but I trust it will not cause the discussion to terminate, if gentlemen are pleased to continue it.

On the motion of the CHAIRMAN, a vote of thanks was passed to Mr. Brassey, before leaving the room, for his valuable and suggestive paper.

Mr. BUTLER-JOHNSTONE, M.P.: I too, in common with Mr. Scott Russell, was extremely anxious to hear all the naval men speak on this occasion, and I was equally anxious to hear the naval architects, because it is essentially a question for naval architects as well as for naval men. But there is also another aspect of the question which is no less important. In old times there were two descriptions of ships which we sent out in case of war. There were the ships which had to fight the enemy's vessels,—and do what you like with the "Cunard" and "White Star," and other lines, you will never make them equal in fighting strength to a vessel built expressly for that purpose, any more than you can make a carrier pigeon equal in strength to a hawk; but there was another class of vessels sent out, what we used to call specifically "cruizers," to prey upon the enemy's commerce, and to destroy his resources, and so put an end to the war. These fast-sailing clipper steamers are the very things which could, at a very small expense, be admirably adapted for that purpose. But if, as Mr. Scott Russell said, we made a mistake forty years ago relative to the contracts for mail steamers, what a gigantic, what a disastrous mistake we made twenty years ago, when we signed the Declaration of Paris; because even if you send out the cruizers, and cover the ocean with your fast-sailing ships, carrying guns, there will be no commerce to prey upon. Do you suppose any enemy will be foolish enough to come out of his forts and fight your vessels when he can remain in, as the Russians did, and defy you? Nelson's great victories, Howe's great victories, how were they achieved? By putting an absolute embargo upon the enemy's commerce. The enemy came out to protect his commerce, and then you sank his fleet. But now, under the Declaration of Paris, the enemy's commerce will sail under a neutral flag, and there will be nothing for your cruizers to prey upon. You may spare yourselves taking any trouble about these armed vessels, for there will be nothing for them to do. You have plenty of ships of war to defy the enemy, but they will never come out to you; and as long as the Declaration of Paris is unrepealed, there will be no enemy's commerce to prey upon; and all these questions of turning our merchant steamers into ships of war are useless. There will be nothing for them to fight. In my capacity as Member of Parliament, I thought it my duty to put this aspect of the question before you. I have received great profit from the discussion to-day, and shall be only too happy to support Mr. Brassey the next time a mail contract comes before Parliament.

Captain SCOTT: Mr. Scott Russell has given us a view of the future, but what we want is a correct knowledge of the present requirements. Of course you may find fault with the strength of merchant ships, but the point is to utilise them for what they are fit, and doubtless this very foundation force *can* be largely utilised. As Mr. Brassey has just left this theatre, I can freely refer to the great good he has done, in stirring up the authorities to inquire whether our merchant steamers can or cannot carry guns. This question, and also the question as to the best use which can be made of the merchant navy during war, ought long ago to have been settled. At the commencement of the Crimean war, just before the sailing of Admiral Napier for the Baltic, when I had just returned from a special mission with the masters and pilots intended for his fleet, I put before the First Lord the suggestion of Mr. J. Bodie and the other masters, viz., the effect it would have, if all the powerful steam-tugs were to be immediately taken up, armed, and sent off at once to Cronstadt to threaten St. Petersburg. Look at the moral force we should have exerted by their early presence. The First Lord, however, sent for me the following day, and said he had been considering the matter, and would build some vessels, as was accordingly done, but they were built too late to take part in the war.

Mr. GREAVES, M.M.: Mr. Chairman, with your permission I should like to make a few remarks on this subject. In the year 1841, when the Royal Mail Company first started, I had the honour of being one of its servants, and very well recollect that every one of the Royal Mail Company's vessels was bound by the terms of their charter of incorporation and contract, to be built of sufficient strength to be able to carry an armament in the event of war. Of late years that idea has been abandoned, and if you were now to go to any of these mail companies and make a proposition to them to build henceforward only such vessels as would be approved of by the Government for the purpose of warfare, I do not suppose that they would listen to you for a moment. Since that time we have become a remarkably practical

people. Merchants and shipowning companies have now another gospel than that which prevails among the Navy and Army, who are brought up to regard warfare as their natural field of industry. Outside of the Navy and Army, there is a new gospel—"to buy in the cheapest market and sell in the dearest." Now, if such a proposition was made to the directors of these companies, they will say: "What are we going to do with the eighty ships, more or less, we have on our books?" "What would our shareholders say to us? We were incorporated under a Royal charter for a specific purpose, and laid ourselves out to carry the mails at a contract rate of speed; moreover, all our vessels are built so that they may be ventilated in the largest possible degree, and every one of these ventilation holes is a great source of weakness when you would set about the difficult task of strengthening these vessels, so as to enable them to carry an armament." These companies could not put aside their old fleets, because that would simply mean insolvency. Besides that, there is another reason. All these vessels that are now employed by the Post Office in carrying the mails under subsidy, suffer a very great deal from competition with other companies, which are not incorporated in the same way, and which are not subsidized by the Post Office, and yet which do carry mails for nothing; and in the course of some ten years we may almost assume that there will be no longer in existence any such thing as subsidies for mail steamers. Already a very large number of the existing companies are in great fear as to what they shall do in consequence of having over-built themselves. Witness, for instance, the Pacific Company, which has more ships than it can profitably employ; moreover these large mail steamers, if they burn more than a certain proportion of their coals are brutes. If any man has stood in Panama, or at the New Zealand terminus of that line, and seen those magnificent mail steamers come in at the end of their voyage, he must have been horrified to see what bladders they were, lying on the top of the water, and it is a fact that in those vessels the greatest care had to be taken to see that they did not get a permanent list. In the last days of their voyage you would see these ships—then "flying light"—swaying from side to side. With regard to the steamers eight times their beam, unless they could be always maintained at one particular measure of immersion, they would not be safe to carry guns on their deck. Neither, if war broke out, would we find artisans sufficient to refit them for purposes of war; for we have not at the present moment men enough in our dockyards. Every man who reads his half-a-dozen papers a day—as he ought to do—and keeps his eyes open, knows we are on the eve of a very terrible war, and I do not believe we could take twenty or thirty of these vessels, and suddenly and swiftly prepare them and send them out. They would have to go out, remember, to fight all comers, and they are utterly useless when the coal is out of them. They must find coal wherever they go. They will not be able to say, as now: "Good bye; this day ten days I shall be in New York." Those competing mail steamers burn coal without any economy at all. Engines of the most economical class are put into them, but they are all competing with each other, and if one makes a shorter passage than another by an hour, there is a paragraph in every Liverpool and every London paper the next day about it. They are living the life of men who compete with one another, knowing that the chances are that some one or other of these companies must care in, because, for the most part, they have over-built themselves, and their carrying powers are larger, particularly at this present moment, than this country has any demand for. If you were to take the whole of the mail steamers employed by the Post Office, I doubt if you would find amongst them twenty vessels that could be made fit in a reasonable time, supposing war broke out, to carry a 64-pounder on their upper deck, and I have very much doubt whether the firing off of those guns, say, half-a-dozen times, would not reveal such defects in their construction as would make you very much surprised to think you could ever have had the audacity to place such a gun on board. Even if we had any number of these vessels, we have nobody to man them. One speaker has said he very much doubts the statistics with regard to the number of British seamen. I am perfectly certain that, do whatever you will with those statistics—you may be the greatest master of hanky-panky in statistics that ever existed in this world—but you cannot find four men to every ship that are fit to be called seamen. You may stretch a point, and assume that you have two able-bodied men to each ship, but the rest must be made

up of ordinary seamen, landmen, and boys; and can you expect that joining the Naval Reserve for a month's drill in each year will make them of any value in time of war? Men turn round and say in their vernacular "*Cui bono?*" What benefit "do I get by it? Nothing at all. Not only that, but there is another reason why "I should not join the Naval Reserve. The Government has laid open the mercantile marine, which used to be the *British Merchant Service*, as a trading school "for the seamen of all the nations in the world, and I find the foreigner in every "grade and position. I have lost my bread, my industry, and my ambition; I am "without hope; I do not care anything about it, and I intend to go out to the "colonies, and remain there permanently, and become a citizen, and not follow the "sea any longer." We do not now find that class of men going into the merchant service during these last ten years that used to flock to it when I was a boy. You may find an advertisement in the "*Daily Telegraph*" from a firm for apprentices, who are to be allowed to wear midshipmen's *uniform*, which means that no two persons on board ship will be found to be dressed alike. A very large number of these youths who are thus invited and trapped are the sons of opulent tradesmen, and after a few years they find out that the life is a hard life, that it demands great self-denial, and a considerable degree of brains, and greater application than they thought, and they forsake it, so that we have not now in our merchant service any of those boys, of whom we once had such a number, growing up to men whose delight it was to fight. I take it as an absolute necessity if any man goes into the Navy, he must love fighting for fighting's sake, and I take it that a merchant seaman joins a fleet ship in the hope that she will be so fleet that if she meets an enemy she will be able to run away, and never fight at all. In fine, there is an utter absence at this moment, as there has been for years, of anything like sympathy between the men who serve on board the merchant ships which now sail under the British flag and those men by whom her Majesty's vessels of war are manned, and for the simple reason that in every point, their lives are as different as it is possible that lives can be.

Captain CARMICHAEL, 5th Royal Irish Lancers: The speaker who has just sat down said that this question of shipping is affected very much by the gospel of England that we must buy in the cheapest market and sell in the dearest. Now, we bring forward these questions at this Institution, not so much as soldiers and sailors, but as Englishmen, and it is because we believe that in the end the commercial classes will have to buy in the dearest and sell in the cheapest market if they neglect the Navy, that we open these discussions. With regard to the armament of these cruisers, perhaps I may be permitted to draw a simile from the Army. If we send out a cloud of cavalry, composed of three squadrons, and there is only one opposed to us, we prevent the enemy doing us a great deal of injury; but if the enemy bring up their heavy artillery and infantry, we have to retreat. So, if we have a numerous body of light cruisers, we shall defend ourselves from a great deal of damage that we should otherwise suffer; but when the heavy ships come up, no doubt we shall have to give way, and if we have no heavy vessel to meet those of the enemy, we shall suffer. But plainly we are better off with a great number of light cruisers than without them.

The CHAIRMAN: If nobody else wishes to address us on this subject, I think I may gather up your opinions in this, viz., to thank the lecturer, Mr. Brassey, not only for this lecture, but also for the previous one, and for the amount of attention he has uniformly given to these subjects, greatly to the benefit of the nation as well as of the Navy. I am sure you will all join with me in thanking him, and hoping that he will continue his attention to them as efficiently as he has done.